

A NOTE ABOUT THE SAMPLE ACTIVITIES

The following are sample activities designed to show you examples of possible activities for each API. You are not required to use these specific activities in your portfolios. The APIs used in this document come from the column for grades 6-8 in the TCAP-Alt Performance Indicators document, which is available on the Tennessee State Department of Education website. The URL is: <http://www.tennessee.gov/education/speced/assessment.shtml#tcap>. Scroll down to the "Alternate Assessment" section.

Activities should be written in the past tense (e.g., "[Student's name] completed . . ."), since the evidence sheet should be filled out after the activity has been completed. Be sure to use the student's name when describing what he or she did during the activity (e.g., not, "The student counted jellybeans into a plastic cup," but "Anaxamander counted jellybeans into a plastic cup.").

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.1 *Count how many objects are in a set (1-50)*

Sample Activities:

- Given a box of 25 one-inch rubber balls, [student's name] picked up one ball and dropped it into a coffee can each time the teacher said, "Put one ball in the can."
- With hand-over-hand assistance, [student's name] touched each cotton ball in a row of five cotton balls as the teacher counted them aloud.
- Given three wooden blocks, [student's name] dropped the blocks, one at a time, into a pail. The teacher counted the blocks aloud as [student's name] dropped them.
- Given 10 wooden clothespins, the student dropped the clothespins, one at a time, into a pail. The teacher counted the clothespins aloud as the student dropped them.
- [Student's name] was given 10 marbles and a jar. As the teacher counted aloud from 1-10, [student's name] dropped one marble into a jar each time a number was spoken.
- [Student's name] was given a set of 1-15 novelty pencils. On request, he/she counted the pencils aloud, touching each one as he/she counted it. He/she counted five sets of 1-15 pencils.
- [Student's name] counted how many objects were in a set (1-25) using buttons. He/she counted ten sets of 1-25 buttons, counting aloud and pointing to each button as he/she counted it.
- In preparation for painting a mural, [student's name] counted the number of peers at his/her table, gave each peer a paint brush, and told the teacher how many total brushes were given.
- Given a peg board and a number of colored pegs, [student's name] verbally counted the number of pegs of each color (e.g., three blue pegs, five red pegs, two yellow pegs) and put them in the peg board.
- Given 15 Nerf balls, [student's name] counted the balls and placed them in a basket.
- Given a plastic bag and 48 plastic cups, [student's name] counted the cups and placed them in the plastic bag.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.2 *Count to 100 by 1's, 5's, and 10's*

Sample Activities:

- Given a plastic disc that, when stepped on, makes a ball go up into the air, [student's name] stepped on the disc ten times and counted the number of balls sent into the air each time. When he/she made a counting error, a peer gave verbal prompts as needed. Afterward, [student's name] was asked how many balls had been sent up, and he/she answered correctly.
- Upon request, [student's name] verbally counted to 30 by ones with verbal prompts from the teacher when he/she missed a number.
- [Student's name] played "Mother-May-I," counting the correct number of steps as directed each turn (e.g., "Take three giant steps forward"; "Take three scissor steps forward"; "Take two baby steps backward.")
- Given a box of 100 paper clips, [student's name] placed the clips into groups of 10 and used the groups to count to 100 by tens.
- During a game of "hide-and-seek," [student's name] counted to 100 when it was his/her turn to be "IT." A peer tutor gave verbal prompts when [student's name] missed a number.
- While a peer did jumping jacks, [student's name] counted how many jumping jacks were done.
- [Student's name] played a jump rope game with peers, counting how many jumps each child made before "missing."
- Given 50 pennies, [student's name] organized the pennies into sets of five, then used the groupings to count by fives to find the total number of pennies. He/she repeated the activity four more times, each with a total number of pennies between 50 and 100, divisible by 5.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.3 *Identify equivalent sets of objects by one-to-one correspondence (1-50)*

Sample Activities:

- Given a bag of miniature marshmallows and a set of number cards, each printed with a number from 1-10 and an equivalent number of dots, [student's name] placed a marshmallow on each dot to create a set equivalent to the number on the card.
- Given a set of 1-10 plastic animals and shown a card with a number (1-5) written on it, [student's name] answered "yes" or "no" when asked if the number on the card matched the number of animals in the set.
- Given two sets of 1-10 plastic animals, [student's name] indicated whether the two sets had the same number of animals (thumbs up) or a different number (thumbs down).
- Given a pegboard and 30 colored pegs and shown a second pegboard with 1-30 pegs already placed in the board, [student's name] placed the same number of pegs in his/her pegboard.
- Given modeling clay and shown sets of 1-10 clay balls, [student's name] made a number of clay balls equal to the number contained in each set.
- [Student's name] was given a bag of M&Ms and an egg carton with a number from 1-12 written in the bottom of each individual egg cup. On request, [student's name] placed the correct number of M&Ms into each cup, so that the number of M&Ms in each cup was equal to the number written in the bottom of the cup.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.4 *Identify numerals 0-50*

Sample Activities:

- When given two number cards (1 and 2), [student's name] pointed to the one named by the teacher.
- Given a walk-on number line, [student's name] hopped, jumped, or stepped from the beginning edge of the line to the number requested by the teacher. The teacher made 15 requests, using each number from 1-10 at least once.
- [Student's name] made numbers 1-10 from modeling clay, using number cards as models.
- [Student's name] traced sandpaper numbers 1-10 with a finger and repeated the name of the number after the teacher said it aloud.
- When number cards 0-50 were held in front of [student's name], he/she verbally identified the number on the card. When he/she made an error, the teacher helped by asking guiding questions or giving verbal prompts as needed.
- Given twenty-five laminated cards, each printed with a number between 1 and 50, [student's name] used a dry-erase marker to draw a number of dots on the back of the card equal to the number written on the front of the card.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.5 *Identify and name coins (e.g., penny, nickel, dime, and quarter)*

Sample Activities:

- Given real coins (pennies, nickels, dimes, and quarters) and a card with five realistically-represented coins printed on it, [student's name] matched the real coins to those on the card by placing the real coins on top of their printed counterparts.
- Given a penny and a quarter, [student's name] pointed to the penny on request.
- Given realistic-looking plastic coins (penny, nickel, dime, and quarter) and asked to identify one (e.g., "Show me the dime"), [student's name] pointed to the correct coin.
- While a peer held a handful of various coins, [student's name] picked out five dimes from the mixed change to purchase a brownie from the school bake sale.
- [Student's name] played Money Bingo with three other peers.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.6 *Count pennies, nickels, dimes or quarters with values up to \$5.00*

Sample Activities:

- Given 10 pennies, [student's name] counted them orally by ones.
- Given 20 nickels, [student's name] determined their value by counting orally by fives (e.g., touched the first nickel and said "five," touched the second nickel and said "ten").
- [Student's name] played a money-changing game in which the object was to accrue pennies by answering simple questions correctly at a rate of a penny per answer and "trade up" by exchanging five pennies for a nickel, 10 pennies or two nickels for a dime, etc.
- [Student's name] used dimes and quarters to buy two items from the snack machine with exact change. [Student's name] chose the correct change by matching the coins to cards with pictured coins to equal the cost of the items chosen.
- [Student's name] went to the school bookstore and purchased an item of choice that cost less than \$1.00. [Student's name] counted out the correct amount of money (with prompts from an adult when he/she made an error or seemed uncertain) and paid the cashier.
- Given real coins and a Money Bingo file folder, [student's name] matched the coins to the pictures on the Bingo game card.
- When provided with plastic pennies, nickels, and dimes, [student's name] verbally identified each coin, stated the value of each coin, and counted out a value equal to \$1.00.
- Given real coins and a card picturing the coins required to buy a soft drink from the vending machine, [student's name] placed the appropriate coins on their pictured counterparts to determine how much change is needed, then used the change to purchase a soft drink from the machine.
- With the help of a peer, [student's name] used real coins to count out the exact change to buy a pencil and a writing tablet from the school bookstore.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.7 *Order numbers less than 50*

Sample Activities:

- Given two number cards (1 and 2), [student's name] placed the number cards in numerical order.
- Given a wooden inset puzzle with slots for the numbers 1-10 in order, [student's name] correctly assembled the puzzle by placing each number in its proper place.
- Given birthday candles in the shape of numbers, [student's name] placed the candles in order from 1 to 10. Each time [student's name] chose the correct number, the teacher lit the candle and allowed [student's name] to blow it out.
- When shown three 3 x 5 cards, each with a number between 1 and 50 (inclusive) written on it, [student's name] indicated (by pointing) which number came first, next, and last.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.8 *Use concrete objects to develop strategies for addition or subtraction of whole numbers to 50*

Sample Activities:

- [Student's name] used a walk-on number line to perform simple addition and subtraction problems given verbally by the teacher (e.g., for $3 + 2$, [student's name] would start on the number three and take two steps forward; for $5 - 1$, [student's name] would start on the number five and take one step back).
- Given 10 single-digit addition problems on a worksheet, [student's name] worked the problems using one-inch wooden blocks as counters.
- [Student's name] rolled two game cubes and counted the dots on each cube. Then [student's name] stated an addition sentence reflecting the numbers on both cubes and orally solved the addition sentence. [Student's name] used computation to solve some problems and counted the total number of dots for others.
- Given Touchpoint cards for the numbers 1-3, [student's name] said each number aloud and counted the corresponding points.
- [Student's name] was given an abacus. As the teacher said an addition problem aloud, student's name used the abacus to solve the problem as the teacher stated it. For example, when the teacher said "Three," [student's name] moved three beads to the right; then when the teacher said, "Plus two," [student's name] moved two more beads to the right and told how many beads were there. When the teacher said, "Five," [student's name] moved five beads to the right; then when the teacher said, "Minus two," [student's name] moved two of the original five beads back to the left and told how many beads remained on the right.
- On the whiteboard, [student's name] was given 10 two-digit addition and subtraction problems using whole numbers to 50. [Student's name] used an abacus to correctly solve the problems and write the answers on the whiteboard. The problems did not involve regrouping.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.9 *Represent whole numbers to 50 with models*

Sample Activities:

- After being presented with a visual representation of the number 3, [student's name] drew 3s in shaving cream.
- [Student's name] practiced writing the number 5 in a salt tray.
- [Student's name] made the numbers 1-4 from modeling clay.
- Given a set of 10 Popsicle sticks and asked to show a specific number of sticks no less than 1 and no more than 10, [student's name] picked up a number of sticks equal to the number requested.
- Given a jar of uncooked pinto beans and cards numbered 1-50, [student's name] laid the cards out on the table and placed a corresponding number of beans on each card.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.10 *Read and write numbers to 50*

Sample Activities:

- On a sheet of tablet paper, [student's name] traced a dotted numeral 4 with a highlighter.
- Given a tray filled with sand, [student's name] used one finger to write the number 3 in the sand.
- [Student's name] played a board game in which a number card from 1-6 was drawn to determine the number of spaces to be moved.
- Given a set of 10 Popsicle sticks and shown a numeral from 1 to 10, [student's name] picked up a number of sticks equal to the number shown.
- Given a folder game with 10 pockets, each with a number from 1 to 10, and 10 cards, each with a set of 1-10 items pictured on it, [student's name] placed each card into its corresponding pocket.
- [Student's name] and a peer took turns calling out numbers from 1-50. First the peer called out a number, and [student's name] wrote the number on a lap-sized chalkboard. Then [student's name] called out a number, and the peer wrote the number on the chalkboard. After 10 "calls," the one who had correctly written the most numbers won the set. After four sets, the one who had won the most sets won the game.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.11 *Order whole numbers up to 50 indicating more than, less than, or equal to*

Sample Activities:

- When shown two number cards, [student's name] showed "thumbs up" if the numbers on the card were the same and "thumbs down" if they were different.
- On request, [student's name] wrote the names of six friends and circled the one that has the most letters.
- Given two number cards (1-10) and asked which one was more, [student's name] pointed to the greater number.
- Given two number cards (1-10) and asked which one was less, [student's name] named the smaller number.
- Given a clothesline, 10 "pinch clothespins," and five cardboard shirts numbered 1-5, [student's name] clipped the shirts to the clothesline in numerical order.
- Given 10 "pinch clothespins" and a set of 50 poster board blackbirds numbered 1-50, [student's name] clipped the blackbirds in numerical order to a cardboard tree branch.
- Given 50 file folders, each labeled with a number between one and 50, the student will file the folders in numerical order in a filing cabinet.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.12 *Identify place value of ones and tens*

Sample Activities:

- When shown a paper grid with a column for the tens place and a column for the ones place and asked “Which is the tens place?” and “Which is the ones place?” [student’s name] pointed to the correct column.
- [Student’s name] was given a paper grid with a column for the tens place and a column for the ones place and asked to write the numbers 1-20 with each digit in the correct column. After [student’s name] had completed the grid, incorrect answers were marked, and the teacher helped [student’s name] figure out the correct answers and replace the incorrect ones.
- Given number cards from 1-20 and 100 paperclips to use as manipulatives, [student’s name] placed the paperclips on the cards to represent the place value (e.g., for the number 32, [student’s name] would place three paperclips in the tens place and two paperclips in the ones place).
- Given a number card from 1-99 and asked, “How many ones?” and “How many tens?” [student’s name] verbally stated the correct number of ones and tens.
- [Student’s name] played a “tens and ones” place value game on the computer. The computer showed a number from 0 to 99, and [student’s name] used “virtual” base ten blocks (one block = 1, a strip of 10 blocks = 10) to correctly represent the number shown.
- [Student’s name] used an abacus to represent numbers from 1-99, as a peer called out each number.
- [Student’s name] was shown a paper grid with a column for the ones place, a column for the tens place, and a column for the hundreds place. When the teacher asked, “Which is the [ones/tens/hundreds/ place?” [student’s name] pointed to the correct column.

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Alternate Learning Expectation (ALE): NO.1 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems*

Alternate Performance Indicator (API): NO.1.13 *Recognize and engage in use of commutative, associative, and identity properties*

Sample Activities:

- [Student's name] used buttons to represent single-digit addition problems written on the whiteboard. The teacher included pairs of problems that demonstrated the commutative property, such as $1+2$ and $2+1$. [Student's name] used the buttons to work both problems. The teacher asked questions to guide [student's name] to the realization that the answer was the same, regardless of the order of the numbers.
- Given Popsicle sticks and a series of three-step, single-digit addition problems, [student's name] used the Popsicle sticks to make a visual representation of the problems and solve them using various groupings, such as: $(1+2) + 3$ and $1 + (2+3)$. The teacher asked questions to guide [student's name] to the realization that the answer would be the same, regardless of how the numbers were grouped.
- [Student's name] was given a set of one-inch plastic tokens to use as manipulatives. On a sheet of tablet paper, the teacher wrote 10 math problems involving the addition of zero to a single-digit number. Using the tokens to visually represent the numbers in each math problem, [student's name] worked each problem. The teacher asked questions as needed to guide [student's name] to the realization that adding nothing—zero—to any number resulted in the same number.

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.1 *Identify the position of a whole number less than 50 on a number line*

Sample Activities:

- [Student's name] and four peers were each given one of a set of 12"x12" cards numbered from 1-5. Each student held up his/her number card. Then, with help from the teacher, [student's name] and peers lined up so that their cards were in numerical order.
- Five of [student's name]'s peers were each given one of a set of 12"x12" cards numbered from 1-5. Each student held up his/her number card. Then, with help from the teacher, [student's name] led each peer to a place in line so that their cards were in numerical order.
- [Student's name] was given a ruler. The teacher asked [student's name] to show a specific number (1-12) on the ruler, and [student's name] pointed to that number on the ruler.
- Given a walk-on number line with numbers from 1-20, [student's name] moved (by hopping, skipping, stepping, etc.) to the number requested by the teacher.
- Given a laminated number line extending from 1-30 with every other number missing, [student's name] used a dry erase marker to fill in the missing numbers.
- Given a blank number line extending from 1-50, [student's name] wrote each number in its proper position on the number line

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.2 *Recognize a whole and its parts*

Sample Activities:

- A peer presented [student's name] with an apple and encouraged him/her to touch and hold the apple. Then, the teacher cut it into slices for a snack and pointed out that the slices were part of the whole apple.
- Given a wooden pizza puzzle and asked, "May I have the whole pizza?" [student's name] gave the questioner the whole pizza puzzle. When asked, "May I have a slice?" or "May I have two slices?" and so on, [student's name] gave the questioner the requested number of slices.
- After helping make and decorate a chocolate sheet cake, [student's name] verbally identified the finished product as a cake, and then helped cut it into slices and distribute the slices among his/her classmates.
- With assistance from a peer, [student's name] assembled a snap-together model car. The peer asked guiding questions, such as "What's missing now?"

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.3 *Recognize plus sign*

Sample Activities:

- Given a magic marker and a “hidden picture” with 10 “plus signs” hidden in it, [student’s name] found and circled all 10 plus signs.
- Given magic markers and a large piece of butcher paper, [student’s name] drew plus signs in a variety of colors and sizes all over the butcher paper.
- [Student’s name] used his/her index finger to draw plus signs in shaving cream slathered across his/her desk.
- Given 10 single-digit addition problems written on a whiteboard, [student’s name] used a dry-erase marker to circle the plus sign in each problem.
- Given 10 single-digit addition problems and 10 single-digit subtraction problems, in random order, [student’s name] used a dry-erase marker to circle the plus signs in the addition problems.

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.4 *Determine if a figure has been divided into halves*

Sample Activities:

- During a field trip to Pizza Hut, [student's name] was given a Personal Pan Pizza. [Student's name] discussed with peers and the teacher what the whole pizza looked like and what half a pizza looked like.
- The teacher gave [student's name] a brownie to share with a peer. Before dividing the brownie, the teacher moved the knife to various positions and asked [student's name] if both portions would be equal. When [student's name] answered "yes" incorrectly, the teacher and peer used guiding questions to help [student's name] realize that one portion was larger and one portion was smaller. When [student's name] correctly identified the point at which the brownie would be divided into halves, the teacher cut the brownie and gave half to [student's name] and half to the peer.
- Given 25 photographs of objects (e.g., apples, oranges, melons, pizzas, cookies), some of which were whole and others of which had been divided into halves, thirds, and quarters, [student's name] placed the items that had been divided into halves into one pile and the rest of the objects into another.

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.5 *Recognize and identify fractions as parts of wholes (e.g., $\frac{1}{2}$, $\frac{1}{4}$)*

Sample Activities:

- [Student's name] was given a cardboard "apple pie" cut into quarters. When the teacher presented one of several fraction cards (e.g., $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$), [student's name] gave the teacher a number of slices equal to the fraction shown.
- [Student's name] was given a set of fourteen 4" diameter cardboard "pizzas" with lines drawn on each to show eight equal slices. When the teacher requested a certain fraction of the pizza (e.g., $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{4}$), [student's name] used scissors to cut that many slices from one of the pizzas and give them to the teacher.
- With the help of a peer partner, [student's name] completed an origami project while a teacher-written story about paper cranes was read aloud to the class. As the story progressed, it included instructions for creating an origami crane. [Student's name] used the instructions to fractionally fold and tear his/her paper. With each fold and/or tear, students were asked to verbally identify fractional amounts of the whole created. When [student's name] had trouble identifying the fraction, the peer partner asked guiding questions and gave verbal prompts to help [student's name] arrive at the correct answer.

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.6 *Using objects or pictures, identify that $\frac{1}{2}$ is greater than $\frac{1}{4}$*

Sample Activities:

- During preparation for a class snack, two watermelons were cut. One was cut in half, the other into quarters. [Student's name] was asked which was larger, $\frac{1}{2}$ or $\frac{1}{4}$ of the watermelon. The teacher used guiding questions and statements as needed to help [student's name] come to the realization that $\frac{1}{2}$ is larger than $\frac{1}{4}$.
- Given four symmetrical cardboard shapes, each divided into quarters, [student's name], on request, pointed to $\frac{1}{2}$ and $\frac{1}{4}$ of each shape and then told which was greater.

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Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.7 *Connect written and pictorial representations of fractions with denominators up to 2*

Sample Activities:

- When asked to give the teacher $\frac{1}{2}$ a chocolate chip cookie, [student's name] broke the cookie in half. [Student's name] kept half the cookie and gave the teacher the other half. (Prerequisite)
- [Student's name] used fraction tiles to model the fractions $\frac{1}{2}$ and $\frac{2}{2}$ as represented on index cards.

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Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.8 *Recognize operational signs (e.g., add, subtract, multiply, and divide)*

Sample Activities:

- [Student's name] was given a list of 50 horizontal math sentences involving various combinations of addition and subtraction. The teacher asked [student's name] to use a marker to circle the signs that mean addition in blue. After the addition signs had been marked, [student's name] was asked to circle the subtraction signs in red.
- When provided with a worksheet of 20 horizontal math sentences involving various combinations of addition and subtraction, [student's name] used a calculator to complete the math sentences.
- When provided with a worksheet of 20 horizontal math sentences involving various combinations of addition, subtraction, multiplication, and division, [student's name] used a calculator to complete the math sentences with the correct order of operations.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.9 *Use strategies including rounding to estimate in real world problems*

Sample Activities:

- [Student's name] participated in a class discussion about the shopping list for a class party. [Student's name] suggested an approximate number of at least two food items needed and estimated the total cost of the items.
- [Student's name] helped a group of peers estimate the number of packs of paper needed to bind a given number of copies of a class magazine of poems and short stories written by the students in the class. [Student's name] and peers used a calculator and scratch paper to determine the number of packs needed and wrote the final answer on a simple requisition form provided by the teacher.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.2 *Understand meaning of operations and how they relate to one another*

Alternate Performance Indicator (API): NO.2.10 *Demonstrate awareness that multiplication is repeated addition*

Sample Activities:

- [Student's name] used one-inch cubes to visually represent and solve 10 single-digit multiplication problems. For example, 3×2 would be represented as two groups of three blocks each. [Student's name] solved each problem by adding the two groups of three blocks together.
- Given 5 single-digit multiplication problems written on a whiteboard, [student's name] used a dry erase marker to represent each problem as a repeated addition problem. For example, 2×6 would be represented as $2+2+2+2+2+2$. [Student's name] then solved each problem using Touchpoints.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.1 *Solve simple word problems involving whole numbers 0-50*

Sample Activities:

- [Student's name] used one-inch blocks to solve 10 simple word problems verbally presented by the teacher (e.g., "You have six blocks. I have two blocks. If I give you one of my blocks, how many will you have?")
- [Student's name] and a peer took turns creating simple word problems. One presented a word problem by writing it on a lap-sized chalkboard, and the other wrote the answer using colored chalk. Then the roles were reversed. [Student's name] solved the problems using Popsicle sticks as counters.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.2 *Add whole numbers up to 50*

Sample Activities:

- The teacher verbally presented single-digit word problems, and [student's name] used Popsicle sticks to solve them.
- [Student's name] completed a Touchmath worksheet of addition problems without regrouping. Upon completion, the work was checked by a peer, who helped [student's name] correct the problems missed.
- [Student's name] was given a dry-erase marker to use on the whiteboard. The teacher called out a number between 1 and 15, and [student's name] drew a number of dots equal to the number called. Then the teacher called a second number, and [student's name] drew a number of dots equal to that number. Finally, [student's name] counted the total number of dots and explained how the two numbers were combined to make a third, larger number.
- [Student's name] used a calculator and a dry-erase marker to solve 10 one-digit addition problems written on the whiteboard.
- [Student's name] used a calculator and a dry-erase marker to solve 10 two-digit addition problems written on the whiteboard.
- [Student's name] was given a basket and five plastic apples. The teacher orally presented [student's name] with addition sentences that could be solved using the five apples as counters, then helped [student's name] solve each problem by adding the correct number of apples to the basket.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.3 *Solve real-world problems using one to two step addition or subtraction of whole numbers up to 50*

Sample Activities:

- [Student's name] used a calculator to add the cost (rounded to the nearest dollar) of two books he/she planned to buy during the school book drive.
- [Student's name] used addition and subtraction to plan items needed for an imaginary birthday party. The teacher told [student's name] how many guests would attend, and then asked the student to adjust his/her numbers based on emerging events (e.g., "Suzy is allergic to chocolate and can't eat a cupcake. Now how many do you need?").
- After being told that there was a stack of twenty 2'x 4' boards in woodworking class and that [student's name] needed four boards for a woodworking project, [student's name] used subtraction to determine how many boards would be left. He/she solved the problem by removing the four boards needed and counting the remaining boards.
- Given a budget of \$100 earmarked to buy items for a local dog rescue organization, [student's name] used addition and subtraction to help decide how to spend the money. Prices were rounded up to the next dollar value. [Student's name] used paper and pencil and a whiteboard with dry-erase markers for scratch work.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.4 *Add and subtract whole numbers (no more than two digits) up to 50*

Sample Activities:

- [Student's name] worked with a small group of peers to take turns solving two-digit addition and subtraction problems (without regrouping). The problems were presented on laminated flashcards, and the students wrote the answers with a grease pencil.
- [Student's name] played a *Math Blaster* computer game involving addition and subtraction of whole numbers.
- [Student's name] played the addition game "Hidden Picture" on the website www.aplusmath.com. In this game, each correctly answered addition problem uncovered a section of a hidden picture.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.5 *Use calculator in problem-solving situations (e.g., add, subtract, and multiply)*

Sample Activities:

- [Student's name] used a calculator to solve basic purchasing problems from a Menu Math worksheet about menu planning and grocery shopping.
- [Student's name] used a calculator to complete twelve addition and subtraction problems from page 39 of his/her mathematics workbook.
- Given a calculator, a pencil, and a checkbook transaction sheet with a beginning balance and 30 transactions (addition: deposits, subtractions: checks and debits), [student's name] added or subtracted from the beginning balance to find the correct ending balance based on the 30 transactions.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.6 *Apply order of operations when computing with whole numbers using only addition and subtraction up to 50, with use of a calculator*

Sample Activities:

- When presented with a hand-held calculator and encouraged to hold it, [student's name] grasped the calculator with one hand.
- Given a hand-held calculator, [student's name] randomly pushed the number buttons on request.
- On request, [student's name] input given numbers into a calculator. For example, the teacher would say, "Where is the number 1?" and [student's name] would push the number 1.
- When provided with a worksheet of 20 vertical and horizontal math sentences involving various combinations of addition, subtraction, multiplication, and division to 50, [student's name] used a calculator to complete the math sentences with the correct order of operations.

Content Standard: NUMBERS AND OPERATIONS

Standard: *The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically in order to compute fluently and make reasonable estimates in problem solving.*

Alternate Learning Expectation (ALE): NO.3 *Solve problems, compute fluently and make reasonable estimates*

Alternate Performance Indicator (API): NO.3.7 *Use estimation to select a reasonable answer to a real-world problem involving whole numbers to 50*

Sample Activities:

- Given paper and a pencil, [student's name] estimated the number of gallons of gasoline needed to travel from his/her home to a vacation destination of choice. The number of miles and the number of miles per gallon the car gets (rounded to the nearest whole number) was provided on a separate sheet of paper.
- Given a pencil and a sheet of paper with the number of crickets one anole lizard eats in a week, [student's name] estimated the number of crickets needed to feed two anole lizards for one month and wrote his/her estimation on the sheet.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.1 *Sort and classify objects by size, number, and other properties*

Alternate Performance Indicator (API): A.1.1 *Indicate awareness of, react to, and explore color, size, and shape*

Sample Activities:

- Two different colors, red and blue, were displayed in [student's name]'s light box. [Student's name] was presented with three objects: a large red apple, a fuzzy red scarf, and a red ball. [Student's name] was encouraged to touch and explore the red objects as the teacher discussed the color red. Then [student's name] was asked to gaze at the matching color in the light box as the teacher placed the object near the matching color.
- When the teacher projected two different colored beams of light onto the wall, [student's name] turned his/her head toward the color requested. For example, the teacher would say, "Look at the blue light," or "Look at the red light," and [student's name] did so. A paraprofessional provided verbal and touch prompts as needed to complete the task.
- [Student's name] used a writing utensil of choice (a blue crayon) to trace a wooden shape onto paper with assistance.
- [Student's name] chose appropriate colors to complete a realistic drawing during art class. A peer guided him/her by asking questions, such as "What color is the sky?" and "What color is grass?"
- Given a variety of crayons and markers, [student's name] verbally identified the color of each when the teacher pointed to it and said, "What color is this?"
- [Student's name] sorted large stenciled shapes into separate compartments of a sorting tray.
- Given 10 coins, four of which were quarters, [student's name] identified the four quarters—larger than the other coins—and used them to make a soft drink purchase from the vending machine.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.1 *Sort and classify objects by size, number, and other properties*

Alternate Performance Indicator (API): A.1.2 *Sort objects by up to three attributes (e.g., color, size, or shape)*

Sample Activities:

- Given 50 plastic tokens and a compartmentalized sorting tray, the student will sort the plastic tokens according to color.
- Given 64 crayons in eight different colors and a set of eight colored cups to match the crayons, [student's name] placed the crayons into the matching cups.
- Given a deck of UNO cards containing only the colored number cards, [student's name] sorted them into piles by color—red, blue, green, yellow.
- [Student's name] sorted wooden shape pieces according to color and size (e.g., large stars, hearts, and clovers in one tray; small stars, hearts, and clovers in another).
- [Student's name] assisted the P.E. teacher in sorting softballs and basketballs into separate baskets and putting them away.
- [Student's name] assisted the P.E. teacher in sorting a variety of gym balls (e.g., footballs, soccer balls, basketballs, kickballs) into separate baskets and putting them away.
- [Student's name] sorted blue soft-touch round balls and yellow soft-touch footballs from an assortment of soft-touch balls in P.E. class.
- Before purchasing a pencil and erasers from the school bookstore, [student's name] separated his/her coins by size and value.
- [Student's name] sorted paper clips by size and color into plastic containers.
- During a visit to the kitchen to make snacks, [student's name] used the “yes/no” buttons of his/her programmed communication device to identify sets of two given food items as the same or different (e.g., salt & pepper, sugar & sugar, Oreos & carrot sticks) upon request.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.1 *Sort and classify objects by size, number, and other properties*

Alternate Performance Indicator (API): A.1.3 *Identify how objects or numbers have been sorted by two to three attributes*

Sample Activities:

- Three sets of colored plastic shapes—red squares, blue circles, and yellow triangles—were placed on the table in front of [student's name]. [Student's name] was given five colored shapes, each of which belonged in one of the three groups. On request, [student's name] placed each shape with its correct group. (Prerequisite)
- A set of blue plastic circles in various sizes were placed on the table in front of [student's name]. The teacher asked, "How are these things alike?" If [student's name] answered, "Color" or "Shape," the teacher would say, "Yes! And how else are they alike?" If [student's name] missed either answer ("color" or "shape"), the teacher asked guiding questions and prompting statements to lead [student's name] to the correct answers.
- [Student's name] worked in a cooperative learning group to classify shoes. Students in the group took off their shoes and sorted them by size, color, and type. After the shoes were sorted by their properties, [student's name] identified the attribute by which each group of shoes was sorted.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.1 *Indicate awareness of, react to, and explore patterns*

Sample Activities:

- [Student's name] was shown a solid-colored canvas and a canvas printed with a high-contrast geometric pattern. [Student's name] was encouraged to focus on the canvas with the pattern.
- Given a set of 1" colored wooden cubes, [student's name] and a peer tutor took turns arranging the blocks in a variety of patterns.
- Given a bag of blue beads, a bag of green beads, and a string of colored beads strung in a repeating pattern (e.g., blue-green, blue-green; blue-blue-green, blue-blue-green), [student's name] added 10 beads, continuing the pattern. A paraprofessional provided verbal and touch prompts as needed to complete the task.
- Given five pattern cards and cardboard shapes to complete the patterns, [student's name] stated what would come next in a given pattern and attached the pattern piece that should come next.
- [Student's name] used parquetry blocks to match patterns on parquetry cards.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.2 *Recognize two- or three-part repeating pattern*

Sample Activities:

- [Student's name] repeated a three-beat clapping pattern modeled by the teacher. The teacher gave assistance and encouragement as needed.
- Given a bag of blue beads, a bag of green beads, and a string of colored beads strung in a repeating pattern (e.g., blue-green, blue-green; blue-blue-green, blue-blue-green), [student's name] added 10 beads, continuing the pattern.
- On the whiteboard, the teacher drew a series of two-part repeating patterns. [Student's name] used a dry-erase marker to correctly continue each pattern.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.3 *Identify objects as same or different*

Sample Activities:

- Given five sets of two concrete objects each—ball and book, pencil and flashlight, comb and eraser, two matching ceramic frogs, and two identical coffee mugs—[student's name] signaled “thumbs up” to identify the objects as the same or signaled “thumbs down” to identify the objects as different.
- Given a set of 50 cards, each of which had two objects pictured on it, [student's name] put the cards with two matching objects in one pile and the cards with two different objects in another pile.
- [Student's name] played “Concentration,” a matching and memory game, with a peer.
- [Student's name] and a peer played picture dominoes, which required [student's name] to match the picture on one end of the domino being placed to a picture on a domino on the board.
- During a visit to the kitchen to make snacks, [student's name] used the “yes/no” buttons of his/her programmed communication device to identify sets of two given food items as the same or different (e.g., salt & pepper, sugar & sugar, Oreos & carrot sticks) when requested to do so.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.4 *Identify and extend a numerical or geometric pattern*

Sample Activities:

- The teacher began a pattern using geometric blocks. On request, [student's name] chose and placed correct blocks to complete the pattern.
- Using geometric blocks, the teacher placed 13 blocks in a three-block repeating pattern (e.g., red-yellow-blue, red-yellow-blue). The teacher used guiding questions and statements to help [student's name] extend the pattern by placing the next two blocks in the sequence.
- When presented with a worksheet of five different numerical patterns, each with the last number missing, [student's name] filled in each blank with the correct number. The teacher helped [student's name] correct each pattern missed.
- [Student's name] copied three geometric patterns from the board onto construction paper, then discussed the patterns with a peer. With the peer's help and encouragement, [student's name] then drew the next three shapes in each pattern.
- [Student's name] made a bead necklace by repeating a five-bead pattern until the necklace was complete.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.5 *Solve addition and subtraction problems which involve zero*

Sample Activities:

- [Student's name] used Pixie Stix as counters to complete a worksheet involving five addition and subtraction problems involving zero (without regrouping). When all the problems had been worked correctly, [student's name] chose a Pixie Stick to eat.
- On a worksheet, [student's name] solved 20 single-digit addition and subtraction problems that involved zero (without regrouping). [Student's name] used manipulative blocks as needed to help solve the problems.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.6 *Identify patterns and data represented in graphs (e.g., bar, line, and pictographs)*

Sample Activities:

- [Student's name] asked 10 peers which of three movies they liked best. With help from the teacher, [student's name] then made a pictograph representing the answers given.
- [Student's name] looked at and, with the help of a peer, read and analyzed five different bar graphs on page 62 of his/her math workbook. The peer then helped [student's name] draw an original bar graph in the workbook based on data provided about hobbies and sports.
- Given two bar graphs representing money earned from a bake sale, one of which shows a notably greater amount than the other, [student's name] pointed to the bar graph that showed more when requested to do so.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.2 *Represent and analyze patterns and functions*

Alternate Performance Indicator (API): A.2.7 *Demonstrate understanding that an equation is a number sentence stating two quantities are equal (e.g., $2+3=5$ or $2+3=4+1$)*

Sample Activities:

- Given laminated math sentence strips and a dry-erase marker, [student's name] used a calculator to determine whether the two sides of each equation were equal. [Student's name] then circled the equal sign if the two sides of the equation were equal and put an "X" on the equal sign if the two sides of the equation were not equal.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.3 *Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics*

Alternate Performance Indicator (API): A.3.1 *Use concrete objects or pictures to demonstrate addition and subtraction number sentences involving numbers 0-50*

Sample Activities:

- Given 50 uncooked pinto beans and a sheet of paper to place them on, [student's name] used the beans to represent single-digit addition problems verbally presented by the teacher. For example, the teacher would say, "Two," and [student's name] would place two beans on the paper; then the teacher would say "Plus three," and [student's name] would add three beans, for a total of five. Or, the teacher would say, "Seven," and [student's name] would place seven beans; then the teacher would say "Minus four," and [student's name] would remove four beans for a total of three.
- Given plastic counters and 10 addition number sentences, each written on a separate card, [student's name] placed the correct number of counters beneath each number written, then placed the correct number of counters to the right of the equal sign to complete the number sentence. For example, given $2 + 7 = ?$, [student's name] placed two counters on the number 2, seven counters on the number 7, and nine counters to the right of the equal sign.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.3 *Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics*

Alternate Performance Indicator (API): A.3.2 *Solve open sentences involving addition or subtraction up to 50*

Sample Activities:

- [Student's name] played the computer game "Algebra Planet Buster" at www.aplusmath.com, which involved solving addition and subtraction problems with one variable.
- [Student's name] completed a worksheet of 10 subtraction problems involving one variable. A peer tutor helped [student's name] correct the problems missed.

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.3 *Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics*

Alternate Performance Indicator (API): A.3.3 *Connect open sentences to real-world situations*

Sample Activities:

- Using grocery ads and a calculator, [student's name] calculated the cost of multiple items on a predetermined grocery list and wrote the total cost at the bottom of the list. (Prerequisite)
- When working with a peer to stockpile stocking items on the shelf at the school food bank, [student's name] answered open sentences given by the peer and related to the task at hand (e.g., "There's space for six cans of corn. There are already two there. How many cans do you need from the box?" or "If I get six boxes of macaroni and you get four boxes, how many will the two of us together put on the shelf?" or "If there are six boxes of macaroni on the shelf, and I put three of them there, how many did you put there?").

Content Standard: ALGEBRA

Standard: *The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.*

Alternate Learning Expectation (ALE): A.3 *Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics*

Alternate Performance Indicator (API): A.3.4 *Represent the idea of a variable as an unknown quantity using a letter or a symbol*

Sample Activities:

- Given a set of five cards that described mathematical problems, [student's name] helped a peer write an open sentence representing the problem using an "x" for the value not known. For example, one card said, "Between them, John and Cindi have twenty apples. John has seven apples. How many apples does Cindi have?" [Student's name] and the peer wrote a number sentence on tablet paper—using variables—that correctly reflected this information: $20 - 7 = X$ or $7 + X = 20$ or equivalent.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.1 *Identify and/or name given shapes (i.e., circles, squares, triangles, and rectangles)*

Sample Activities:

- The teacher presented [student's name] with a tennis ball (a circular object). With encouragement from the teacher, the student grasped the tennis ball.
- On request, [student's name] removed wooden blocks (spheres and cubes) from a pail and placed them into two groups: round and square.
- [Student's name] identified circles and squares by pointing to the correct shape on a shape board when the teacher named that shape.
- [Student's name] played catch with a peer using rubber toys in a variety of geometric shapes—circle, square, triangle, and rectangle. [Student's name] called out the name of each shape as he/she caught it.
- [Student's name] was given three construction paper shapes—circle, square, and rectangle. When the teacher named an object, [student's name] held up the shape that best represented the objects. For example, if the teacher said, “window,” [student's name] would hold up the rectangle. If the teacher said “pancake,” [student's name] would hold up the circle.
- Using magnetic shapes and a whiteboard, [student's name] correctly identified a circle, square, triangle, and rectangle by placing the shape on the board when the teacher named it.
- Using magnetic shapes and a whiteboard, [student's name] correctly identified a circle, square, triangle, and rectangle by naming each shape as the teacher placed it on the board.
- Given crayons and a worksheet with a variety of shapes, [student's name] colored only the squares on the worksheet.
- [Student's name] verbally identified circles and squares in a winter picture he/she completed by pasting geometric shapes onto construction paper.
- Cardboard shapes in a variety of colors were placed around the room. The teacher called out a color and shape and [student's name] went to the cardboard shape that matched the description.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.2 *Recognize and/or name circles, squares, triangles, and rectangles in the environment*

Sample Activities:

- [Student's name] was given a cut-out circle, square, triangle, and rectangle and asked to find objects in the room with the same shape. [Student's name] pointed to each object and said its name, and a peer wrote the names of the objects found on the corresponding cut-out shape.
- During a walk with a peer around the school, [student's name] accurately identified the shapes of various objects, such as the rectangular glass in a classroom window or the circular shape of a paper plate, by pointing to and naming the objects, along with their shapes.
- [Student's name], accompanied by a peer helper, located different shapes in the classroom to match a set of cut out shapes—circle, square, triangle, rectangle—in [student's name]'s math folder. When a match was found, the peer asked [student's name] to point to it in the folder, asked [student's name] to name the shape, and gave [student's name] a sticker to put on it.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.3 *Reproduce and create circles, squares, triangles, and rectangles*

Sample Activities:

- Given a highlighter and four shapes (two circles and two squares) drawn by an adult, [student's name] used the highlighter to trace each of the shapes.
- [Student's name] made wrapping paper by making potato prints on butcher paper. To make a potato print, the teacher cut a potato in half. On the flat part of half the potato, the area around a geometric shape was cut away, leaving a raised shape. [Student's name] grasped the half-potato, dipped it in paint, and used it as a stamp.
- [Student's name] combined felt circles, squares, triangles, and rectangles to make pictures on a desktop flannel board.
- [Student's name] used colored chalk to make sidewalk pictures using circles, squares, triangles, and rectangles.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.4 *Identify two- or three- dimensional shapes given defining attributes (e.g., square, triangle, circle, and rectangle)*

Sample Activities:

- [Student's name] walked through the school grounds trying to identify the following environmental/survival word signs: stop (octagon), warning (triangle) railroad crossing (circle). Flash cards and duct tape were used to provide some signs not typically found in the school environment. (Prerequisite)
- [Student's name] and a peer played a guessing game in which one player described a geometric shape ("e.g., I am round, with no corners or edges"), and the other guessed which shape was being described.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.5 *Recognize geometric figures that are the same size and shape*

Sample Activities:

- Given a basket containing plastic geometric shapes—triangles, circles, rectangles, and squares—in a variety of colors and sizes, [student's name] sorted the items according to size and shape. After the shapes had been sorted, the teacher removed any that had been incorrectly placed and helped the student sort them correctly.
- Given a set of laminated cards, each with a pair of geometric shapes (with some pairs being identical in size and shape and others being different), [student's name] used a grease pencil to circle the pairs that were the same and put an "x" on the pairs that were different.
- On a worksheet that had five shapes on the left and five identical shapes on the right in a different order, [student's name] drew a line from each shape to its match.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.6 *Identify whether a geometric figure has been divided into two equal parts*

Sample Activities:

- [Student's name] was given a file folder with a pocket on each side, one marked "yes" and one marked "no." He/she was also be given a set of 20 cards printed with geometric shapes. Some of the shapes were divided into two equal parts, and others were not. [Student's name] placed the shapes that had been divided into two equal parts into the pocket marked "yes" and the rest into the pocket marked "no." Then the teacher removed any that were incorrectly placed and used guiding questions and statements to help the student place them correctly.
- The teacher drew a series of shapes on the whiteboard, and [student's name] used a dry-erase marker to divide each shape into two equal parts.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.1 *Analyze characteristics and properties of geometric shapes*

Alternate Performance Indicator (API): G.1.7 *Recognize similar geometric figures (e.g., circle, square, rectangle, triangle)*

Sample Activities:

- [Student's name] was given 10 everyday items (e.g., tissue box, tennis ball, alarm clock, stick of chewing gum) and a set of plastic geometric figures. When the teacher showed [student's name] one of the everyday items, [student's name] pointed to the geometric figure that was the same shape.
- The teacher handed [student's name] 10 pictures of single objects (e.g., table, window, ball, egg, pyramid, drum, pencil, pizza). [Student's name] looked at each picture and named the geometric figure that most nearly matched the pictured item in shape. The teacher provided verbal prompts as needed to complete the task.
- On a field trip to a local grocery store, [student's name] matched items found in a store to the geometric figure that they most closely matched (e.g., circle = frozen pizza; square = square Kleenex box; rectangle = spaghetti box; sphere = orange; triangle = Doritos). [Student's name] indicated a match by naming the shape of each item when a peer tutor pointed to it.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.1 *Recognize and show terms of relative position and direction in a variety of situations (e.g. over, under, left, right, above, below, forward, backward, between, before, after)*

Sample Activities:

- Given a basket of colored cubes, [student's name] played a game in which a peer tutor named a cube color and position (e.g., "blue cube, under the desk" or "red cube, between the pencil sharpener and the Kleenex box") and [student's name] placed the correct cube in the position given.
- [Student's name] entered his/her assigned number into the cafeteria keypad by following verbal instructions from a peer, who used the directions "above," "below," "beside," "top," and "bottom" to direct [student's name] to the position of each number on the keypad.
- While playing a Jr. Monopoly board game with peers, [student's name] verbally described the relative position of the other players (e.g., "Joey is between Mitch and Susan," or "Joey is in front of me") when requested to do so.
- Given a box containing several toy animals and a set of 20 direction cards, a peer read the cards aloud, and [student's name] used the toys to follow the directions (e.g., "Put the dog in the box and a rabbit under the table").
- Given a set of cards, each with a position word written on it, [student's name] chose the card that matched a position or direction modeled by a peer. For example, if the peer held a kickball under his/her foot, [student's name] would hold up the word "under." If the peer held the kickball on top of his/her head, [student's name] would hold up the word "over" or the word "above."
- When given an elephant figurine and verbal instructions to place the elephant in a given location, the student will place the elephant in the appropriate location (e.g., "Put the elephant on top of the pencil sharpener.").
- Given a worksheet with objects in the over and under positions, and asked to mark the ones that are "under," [student's name] placed an "X" on the objects that were under something.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.2 *Identify a line*

Sample Activities:

- [Student's name] used colored pencils and a ruler to make a design composed only of straight lines.
- Given five lines and five solid shapes drawn on the whiteboard, [student's name] used a laser pointer to identify the lines.
- The teacher drew a series of lines and shapes on the chalkboard, pointed to each one in turn, and asked, "Is this a line?" [Student's name] verbally stated whether or not it was a line.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.3 *Identify parallel and intersecting lines*

Sample Activities:

- Given ten 3 x 5 cards that showed parallel and intersecting lines, [student's name] used a communication board to identify the type of lines on each card when the teacher held up the card.
- [Student's name] was given construction paper, a ruler, and writing utensils of choice. When the teacher called out a type of line (parallel or intersecting), [student's name] drew an example of the type requested.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.4 *Determine the distance between two points on a number line*

Sample Activities:

- [Student's name] was given a number line that extended from 1-10. The teacher asked him/her to count to 10 and point to each number as he/she said its name. [Student's name] counted and pointed to each unit in sequence. Then the teacher called out a number, and [student's name] pointed to it. When the teacher called out a different number, [student's name] moved his/her finger forward a given number of units and named the number at the new stopping point.
- [Student's name] was given a number line that extends from 1-10 and asked to point to a specific number. On request, [student's name] counted the number of units from the starting number to a given greater number.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.5 *Identify line segments, angles, and polygons by similar shape and size*

Sample Activities:

- Shown a card with an angle on it and asked to find angles in the classroom, [student's name] identified (verbally and by pointing) at least five typical classroom objects containing angles (e.g., corners, books, desk edges).
- At the teacher's request, [student's name] pointed out lines, line segments, parallel lines, perpendicular lines, obtuse angles, right angles, and acute angles in real classroom objects (e.g., right angle in a corner where the walls meet, two parallel lines in the wood floor, intersecting lines in the two blades of a pair of scissors). The teacher used guiding questions and statements to help the student find appropriate objects.

Content Standard: GEOMETRY

Standard: *The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one, two, and three dimensional figures.*

Alternate Learning Expectation (ALE): G.2 *Specify locations and describe spatial relationships*

Alternate Performance Indicator (API): G.2.6 *Measure the sides of an angle using standard or nonstandard unit of measurement*

Sample Activities:

- Given a ruler and four cardboard boxes of different sizes, [student's name] measured both sides of at least one angle found in each box and told the teacher what each measurement was.
- Given a worksheet with 10 angles and a teacher-made measuring device (a three-inch strip of paper divided into 10 equal units), [student's name] used the measuring device to determine the length in units of the sides of each angle. [Student's name] then labeled each pictured angle with the correct number of units for each side, with help as needed.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.1 *Identify which is larger/smaller, longer/shorter, taller/shorter, heavier/lighter, or which holds more/less when given two similar objects*

Sample Activities:

- When presented with two colored straws of different lengths, [student's name] pointed to the longer straw on request.
- During P.E., the teacher presented [student's name] with five sets of two balls visibly different in size. For each set of two, [student's name] verbally stated which was bigger and which was smaller when requested to do so.
- Given a series of objects of varying weights—a block, a brick, a playground ball, a basketball, a pencil, a feather, an iron, a teddy bear, a paperback book, and a heavy dictionary—[student's name] lifted each one and verbally stated whether it was lighter or heavier than each of the others.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.2 *Indicate awareness of, react to, and explore temperature*

Sample Activities:

- [Student's name] reacted with facial expressions and vocalizations as the teacher touched [student's name]'s hands and cheeks with, alternately, a cool washcloth and a warm buckwheat pillow.
- Given a bowl of ice and a bowl of warm cooked rice, [student's name] used his/her hands to explore the two materials with hand-over-hand assistance. [Student's name] indicated the change in temperature with changes in facial expression.
- Given a choice of two cartons of milk (one cold and one room temperature) and asked which was cold, [student's name] touched each carton and then handed the teacher the one that was cold.
- Given a toy boat and two bowls of water, one hot (but not scalding) and one cold, [student's name] tested each with a finger, then, on request, played with the toy boat in the cold water.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.3 *Recognize clocks and watches as instruments for measuring time*

Sample Activities:

- When given a watch, a book, and a camera and asked which one was used to tell time, [student's name] pointed to the watch.
- [Student's name] and a peer went for a walk around the school. The peer pointed to various concrete objects, including clocks and watches, and asked, "What do we do with that?" When asked about a clock or watch, [student's name] responded by saying that the clock or watch is used to tell time.
- Given a stack of sixteen picture cards—four clocks, four watches, and eight miscellaneous items that are not used for measuring time—[student's name] placed the pictures of "things we use to tell time" in one stack and the other items in a different stack.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.4 *Recognize a thermometer as a device to measure temperature*

Sample Activities:

- When given a watch, a book, a camera, and a thermometer and asked which one is used to measure temperature, [student's name] pointed to the thermometer.
- [Student's name] and a peer went for a walk around the school. The peer pointed to various objects, including thermometers, and asked, "What do we do with that?" When asked about a thermometer, [student's name] responded by saying that it is used to tell the temperature or to tell how hot or cold it is.
- Given a stack of sixteen picture cards—eight thermometers of different types and eight miscellaneous items that are not used for measuring temperature—[student's name] will place the pictures of "things we use to tell how hot or cold something is" in one stack and the other items in a different stack.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.5 *Identify the days of the week on a calendar*

Sample Activities:

- [Student's name] was provided with a current calendar and the numbers 1-31. He/she placed each number in its correct position on the calendar by matching the dates.
- [Student's name] delivers items to different classrooms daily as an office worker. On this day, prior to beginning his/her "delivery route," the teacher asked [student's name] what day it was. [Student's name] pointed to the current day on the calendar and verbally stated what day of the week it was and which classrooms were to be served on that day.
- Given a one-month calendar and the days of the week on Velcro-backed index cards, [student's name] put each day of the week in its correct location when it was read aloud to him.
- [Student's name] independently walked to the calendar and placed the Velcro-backed "days of the week" cards in their proper spots on the calendar.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.6 *Demonstrate awareness of measurement using a measuring tool*

Sample Activities:

- Given a computer-based measuring program to be used in a laptop computer, [student's name] matched measuring tools to the objects they would be used to measure (e.g., teaspoon to sugar, thermometer to temperature).
- Given a ruler and a tape measure, [student's name] and a peer determined and compared the lengths of the following 10 everyday objects: pencil, table, book, spoon, basketball, a peer's shoe, his/her own foot, the class aquarium, stapler, and teacher's desk.
- [Student's name] used a ruler and a yardstick to measure the distance a Matchbox car could travel on various surfaces, such as fabric, wood, grass, sand, and linoleum. He/she made ramps from books and blocks and used them to determine their effect on the car's distance. Results were discussed with the teacher and a peer.
- [Student's name] helped a small group of peers make a cake, using a variety of measuring cups and measuring spoons to measure ingredients. A peer told [student's name] how much of each ingredient was needed, and [student's name] chose the appropriate tool and measured the correct amount, with verbal and touch prompts as needed.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.7 *Demonstrate the understanding of time (e.g., digital clock, analog clock)*

Sample Activities:

- While out on the track with the P.E. teacher, [student's name] used a stopwatch to measure the running speed of peers for 100 meters.
- During music class, [student's name] looked at the clock and told the teacher when it was time to change classes by raising his/her hand when the hands on the classroom clock matched the sample clock taped to [student's name]'s wheelchair tray.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.8 *Identify appropriate tools to measure perimeter, weight, length, and volume (e.g., measuring cup for cooking, yardstick for height, scales for weight)*

Sample Activities:

- [Student's name] used appropriate measuring tools (e.g., measuring spoons, measuring cups, food scales) to help prepare deviled eggs and chocolate cupcakes for the annual Thanksgiving dinner that the Life Skills class holds for parents, teachers, job coaches, and central office staff. All tools and ingredients were set out beforehand, and the student was given a picture sequence recipe card to follow.
- [Student's name] was given a measuring cup, a ruler, a yardstick, a set of scales, and a set of measuring spoons and asked to measure five different items: a cup of sugar, a paperback book, the teacher's desk, a pound of flour, and a teaspoon of cinnamon. [Student's name] chose the correct tool for measuring each item and then attempted to measure it, with help from a peer tutor as needed.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.1 *Demonstrate understanding of units of measure and measurable attributes of objects*

Alternate Performance Indicator (API): M.1.9 *Recognize and follow a simple daily schedule*

Sample Activities:

- Given five sets of action three picture/word cards numbered 1-3, [student's name] drew the cards one at a time and performed the actions in the order specified by each card. The sequences were as follows: Card 1: jump, sit down, stand up; Card 2: go through the tunnel, clap your hands, use the Hula Hoop.; Card 3: do a somersault, do some jumping jacks, stand on one foot; Card 4: hop, put your hands on your head, make a funny face; Card 5: sing a song, spin around, march around the room.
- [Student's name] followed a series of step-by-step sequence cards (with words and pictures) to make two pieces of buttered toast in the housekeeping center.
- [Student's name] followed a series of step-by-step sequence cards (with words and pictures) to do a load of laundry in the housekeeping center.
- [Student's name] followed a series of step-by-step sequence cards (with words and pictures) to make a batch of chocolate chip cookies in the housekeeping center.
- When shown his/her picture schedule after Art class and asked, "What comes next?" [student's name] verbally stated the next activity (Music class) noted on the schedule.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.1 *Use words to describe time (e.g., day, night, morning, afternoon, yesterday, today, tomorrow)*

Sample Activities:

- [Student's name] was shown five pictures clearly representing day and five pictures clearly representing night. As each card was shown, the teacher asked whether the picture represented day or night, and [student's name] answered correctly and explained how he/she could tell which it was.
- [Student's name] drew pictures to illustrate five different times of day. Then he/she labeled each picture with the correct word for the time illustrated by the picture (morning, noon, afternoon, evening, night).

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.2 *Use words to describe temperature (e.g., hot, cold, cool, warm)*

Sample Activities:

- When shown pictures of people dressed for various weather conditions, [student's name] stated whether the temperature was probably hot or cold, based on the clothing worn by the subjects of the pictures.
- When 10 picture cards depicting various temperatures (e.g., a steaming pie, a boy building a snowman, a girl swimming in the ocean on a hot day) were held up in front of [student's name], he/she verbally described each picture, including an explanation of what temperature was being depicted and what evidence in the picture supported this conclusion.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.3 *Measure length of an object to the nearest foot and/or inch*

Sample Activities:

- The student used paperclips to measure various objects in the classroom (e.g., a pencil is two large paperclips plus one small paperclip). (Prerequisite)
- Using a pencil and a paperclip, the student worked with a peer to measure classroom objects (e.g., a stapler is as long as one pencil plus one paperclip). (Prerequisite)
- The student used a tennis shoe to measure the length of five different vehicles parked in the parking lot. Permission from the owners was obtained prior to the activity. (Prerequisite)
- [Student's name] used a 12-inch ruler and 60-inch measuring tape to measure various objects in the classroom (e.g., pencil, belt, shoe, pen, sheet of paper) to the nearest $\frac{1}{2}$ inch. A peer recorded the measurements on tablet paper.
- Using a ruler, [student's name] worked with a peer to measure various cars pictured on a workbook page. Each car was measured to the nearest inch, and each measurement was recorded on a blank beneath the picture measured.
- [Student's name] used a tape measure to measure the length of five different vehicles parked in the parking lot to the nearest foot. A peer tutor recorded the measurements on a photocopied chart. (Permission from the owners was obtained prior to the activity.)

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.4 *Tell time to the hour, half hour, and quarter hour*

Sample Activities:

- [Student's name] constructed a paper plate clock from construction paper, a brad, and a paper plate. Then [student's name] set the clock to various times (to the hour) as requested by the teacher.
- Using a computer program and a switch adapted for his/her wheelchair, [student's name] matched pictures of digital clocks to pictures of analog clocks showing the same time. The clocks depicted times to the hour and half hour. A peer used the mouse to move the cursor over each answer choice, and [student's name] used the switch to click on the correct answer.
- When the teacher orally presented various times (in quarter-hour increments) to [student's name], [student's name] set a small, hand-held analog clock to each stated time.
- Ten cards with clock faces on them (showing different times by the quarter hour) were laid out on [student's name]'s desk. A peer would ask [student's name] to point to the clock showing a specific time, and [student's name] would point to the requested clock (e.g., "Point to the clock that says 4:15.").

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.5 *Mark specified days/dates on a calendar*

Sample Activities:

- Given a list of 10 specific dates (e.g., holidays, half-days, ball games), [student's name] copied the dates on the appropriate calendar pages of his/her agenda book.
- Given a calendar for the month of December, [student's name] used stickers to mark the following special dates: Christmas day, the school play, winter break begins, Christmas party, a peer's birthday.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.6 *Count units to find the perimeter of a square using a grid*

Sample Activities:

- After a discussion of perimeter, [student's name] walked around the perimeter of various-sized squares (from 3'x 3' to 10'x 10') outlined in masking tape and discussed whether each perimeter was greater or less than the previous one.
- With help from a peer tutor, [student's name] used a ruler to measure the perimeter (in feet) of various-sized squares (from 3'x 3' to 10'x 10') outlined in masking tape on the floor. The peer wrote down [student's name]'s measurements on an index card.
- The teacher showed [student's name] a quilt made up of equal-sized squares. The teacher helped [student's name] measure the perimeter of the quilt, using each quilt square as one unit of a grid.
- Given a sheet of graph paper with 10 straight lines (five vertical and five horizontal) drawn on it, [student's name] counted the units of the grid to measure each line and told the teacher how many units each comprised each line.
- Given a sheet of graphing paper with five squares drawn on it, [student's name] counted the units of the grid to measure each side of each square and told the teacher how many units comprised each side.
- Given a sheet of graphing paper with five squares drawn on it, [student's name] counted the units of the grid to measure the perimeter of each square and wrote in the center of each square how many units comprised its perimeter.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.7 *Use standard units to measure length*

Sample Activities:

- [Student's name] and a group of peers measured a table, a puzzle box, and the distance from the window to the door using each of the following items as units of measure: paperclips, unsharpened #2 pencils of the same size, and a mass market paperback book. One peer recorded the measurements. Then the students compared the measurements and discussed how varying the unit of measure influences the numbers, but that the relative sizes of the measured objects remained the same (e.g., the longest distance was always the biggest number). (Prerequisite)
- [Student's name] used a 12-inch ruler and 60-inch measuring tape to measure the length of various concrete objects in the classroom (e.g., pencil, belt, shoe, pen, sheet of paper) to the nearest inch. He/she reported his/her measurements to a paraprofessional, who recorded them on a photocopied chart.
- As part of a group activity, [student's name] lay down on a sheet of butcher paper while a teacher used a marker to outline [student's name]'s body. [Student's name] used markers, crayons, colored pencils, yarn, buttons, and other materials to add clothing, hair, and features. All the class "portraits" were attached to the wall. Then [student's name] and peers used measuring tapes to measure and compare the lengths of their portraits.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.8 *Solve real-world problems involving temperature (e.g., Fahrenheit)*

Sample Activities:

- During a class discussion in Science class, [student's name] helped troubleshoot problems cold weather might cause for horses and helped brainstorm solutions (e.g., windbreaks, blankets). (Prerequisite)
- Given five pictures of thermometers, each representing a different temperature (Fahrenheit), [student's name] verbally stated which of the thermometers represented cold weather, and which represented hot weather.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.9 *Solve real-world problems involving addition and subtraction of measurement using inches*

Sample Activities:

- With help from a peer, [student's name] used a ruler to determine how many inches to cut from each of six 8" x 8" gingerbread squares in order to make a gingerbread house. The student used a plastic knife to mark a line on each square where it should be cut.
- During shop class, with help from a peer, [student's name] used a ruler to determine how many inches to cut from each of six 12" x 6" boards in order to make a wooden birdhouse. The student used a pencil to mark a line on each board where it should be cut.
- During a class project in which an elderly neighbor's backyard was turned into a hummingbird garden, [student's name] used a measuring tape to help measure the distance between various elements of the landscaping (e.g., the distance between the hollyhocks and the butterfly weed).

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.10 *Read temperatures on a thermometer to the nearest 5 or 10 degrees*

Sample Activities:

- With help as needed, [student's name] made a construction paper thermometer with a red line that could be manipulated to represent various temperatures. Then the teacher named temperatures (in 5- or 10- degree increments), and [student's name] "set" his/her thermometer to the given temperature.
- In the library during study hall, [student's name] completed a worksheet by drawing a line from pictures of thermometers to the corresponding temperatures.
- Given a set of 10 cards picturing thermometers showing various temperatures, [student's name] told the teacher what temperature was represented by each thermometer.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.11 *Use estimation to determine if a length or volume measurement is reasonable*

Sample Activities:

- [Student's name] was given the measurements for a ten-gallon aquarium. The teacher named a specific amount (volume) of water, and [student's name] used estimation to determine whether the aquarium could hold that amount of water. He/she used scratch paper and simulated the size of the aquarium using drawings, blocks, and a ruler to help visualize the information given in the problem. Each block equaled the space one gallon of water would take up. For example, when the teacher said, "Two gallons," [student's name] checked to see if two "one-gallon" blocks would fit in the aquarium, then measured the dimensions of the ten-gallon aquarium and compared it to the dimensions of two blocks, then drew an illustration on the white-board showing how the aquarium could be divided into ten "one-gallon" sections and shaded in two of them to show that two gallons would fit, with space left over. When the teacher said, "Twelve gallons," [student's name] used the same strategies to prove that twelve gallons would not fit in the tank without overflowing.

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.12 *Solve real-world problems involving time*

Sample Activities:

- With assistance from peers during a group activity, [student's name] constructed a timeline that displayed the history of the United States in chronological progression. [Student's name] used his/her timeline to verbally answer questions about time (e.g., "How long ago was the Civil War?"; "How long after World War I ended did World War II begin?")
- Student's name] completed a teacher-made worksheet of 10 real-world word problems involving measurement of time.
- Given a daily schedule for an imaginary child, [student's name] used the schedule to verbally answer questions about time (e.g., "How long does Sharon have to get to the band room after her Algebra class?").

Content Standard: MEASUREMENT

Standard: *The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.*

Alternate Learning Expectation (ALE): M.2 *Apply appropriate techniques and tools to determine measurements*

Alternate Performance Indicator (API): M.2.13 *Solve real-world problems involving length*

Sample Activities:

- [Student's name] used a ruler to determine the length of ribbon needed to trim an apron made in home economics class, then cut the ribbon to the desired length.
- [Student's name] used a tape measure to determine the length and number of boards needed to make a 5'x 5' log cabin for the Homecoming float, then helped his/her classmates gather the boards they would need.
- [Student's name] used a tape measure to determine the dimensions of a bolt of fabric needed to create a table drape for a class open house. A peer recorded the measurements on tablet paper and helped [student's name] cut the needed amount of fabric.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.1 *Develop, select, and use appropriate methods to collect, organize, display, and analyze data*

Alternate Performance Indicator (API): DAP.1.1 *Recognize representations of data using concrete objects, pictures, and simple graphs (e.g., pictographs)*

Sample Activities:

- [Student's name] used various magazines and newspaper supplements to locate ads about personal items, food, and clothing. [Student's name] then cut them out and pasted them into a journal for a later discussion. (Prerequisite)
- Given a simple pictograph representing one person with red hair and three people with brown hair, [student's name] pointed on request to the column that showed how many people had red hair and then to the column that showed how many people had brown hair.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.1 *Determine whether an event is possible or impossible*

Sample Activities:

- After listening to the legend of Pecos Bill, [student's name] verbally discussed which events in the story could actually happen and which could not.
- The teacher verbally described 10 separate events, some of which were possible (e.g., "the horse ate some grass") and some of which were impossible (e.g., "the rabbit spread its wings and flew away"). After each event was described, [student's name] told whether or not the event could happen. Upon request, [student's name] explained why the event could or could not happen.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.2 *Interpret data displayed in simple pictographs*

Sample Activities:

- Given a simple pictograph representing one person with red hair and three people with brown hair, [student's name] verbally told (on request) how many people had red hair and how many people had brown hair.
- [Student's name] took part in a class project in which each student tried four different pies—chocolate, pecan, pumpkin, and custard—and placed a paper pie cutout in a pictograph column representing his/her favorite kind of pie. [Student's name] used the completed pictograph to determine how many students in the class favored each kind of pie.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.3 *Interpret bar graphs with no more than two data items*

Sample Activities:

- The teacher asked each student in the class if he or she preferred cats or dogs. Each answer was represented in one column of a bar graph on the white board. [Student's name] looked at the bar graph and verbally indicated which animal was preferred by more classmates.
- Given a bar graph comparing people who preferred to get up early and people who preferred to sleep late, [student's name] verbally indicated which group was the largest, how many were in each group, and the difference (in units) between the two groups.
- The class was given two different flavors of pancakes—banana and blueberry—to sample. [Student's name] chose his/her favorite flavor and graphed it as the first bar of a bar graph made on poster board. Then [student's name] asked his/her classmates which flavor they liked best and graphed their responses along with his/her own.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.4 *Connect data in tables to pictographs*

Sample Activities:

- [Student's name] was given a completed table showing students who preferred bicycles, students who preferred skateboards, and students who preferred rollerblades. The teacher and [student's name] discussed the information given in the table. Then [student's name] used the information given in the table to correctly complete a blank pictograph (on poster board) by drawing the correct number of icons in each row of the pictograph.
- [Student's name] was given a completed table showing the number of macaws in the wild, the number of cheetahs in the wild, and the number of black rhinos in the wild. Then he/she was given an unlabeled pictograph with three rows of icons that represented the numbers in the table. When asked to do so, [student's name] correctly labeled each row of the pictograph.
- [Student's name] was given a completed table showing the number of macaws in the wild, the number of macaws in zoos, number of macaws kept as pets in the U.S. Given a blank pictograph, [student's name] used the information in the table to label the rows in the pictograph and draw the correct number of icons in each row.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.5 *Determine if an event is likely or not likely using simple experiments (e.g., coin toss)*

Sample Activities:

- [Student's name] and three peers took turns reaching blindly into a container of 10 marbles (2 green, 3 red, 5 blue) to select a colored marble (replaced after being drawn). Each student drew 10 times. For each marble picked, they colored the appropriate square in a bar graph with a marker that matched the color of the marble picked. (The graph was drawn on chart paper and had labels for each of the three possible colors.) The teacher asked guiding questions, such as "Did some results happen more often or less often than others? Do you think some results are more likely to happen than others?" [Student's name] and peers repeated the experiment, this time without replacing the marble, and compared the results.
- [Student's name] and three peers spilled out the contents of cups containing five two-colored counters and recorded the number of red sides up and the number of yellow sides up. They performed the experiment 20 times, examined their data, and then discussed questions such as "Does getting four red sides up happen more often than two red sides up?" They discussed their reasoning.
- [Student's name] and a peer were each given a spinner with four numbered sections. The students spun their spinners simultaneously, and together they recorded whether they had a match. After doing this several times, they predicted how many times they would have a match in 20 spins. Then they compared their prediction with what happened when they actually spun the spinners 20 times. They repeated the activity with a different number of equal sections marked on their spinners.

*These activities were adapted from the New Jersey Mathematics Curriculum framework, copyright 1996 by the New Jersey Mathematics Coalition, web address http://dimacs.rutgers.edu/nj_math_coalition/framework/ch12/ch12_k-02.html.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.6 *Reproduce and interpret data in simple circle graphs and/or line graphs*

Sample Activities:

- [Student's name] participated in a whole-class activity in which each student was asked his/her favorite flavor of ice cream—strawberry, chocolate, vanilla, or other—and given a paper cutout of an ice cream cone to represent his/her choice—pink for strawberry, brown for chocolate, white for vanilla, and yellow for other. [Student's name] chose strawberry. The teacher drew a circle on the board large enough for all the paper cutouts to fit around. The students who chose strawberry used tape to attach their cutouts around one section of the circle, the students who chose chocolate attached their cutouts around another section of the circle, and so on. Once all of the cutouts were attached, they were evenly spaced around the circle and grouped by color. The teacher drew lines to create the wedges of the pie graph, representing the number of students who chose each flavor. [Student's name] participated in a class discussion of what each wedge represented.
- Given two line graphs representing a hypothetical student's grades, one of which shows improved performance (line going up) and one of which shows a decrease in performance (line going down), [student's name] correctly identified which is which when requested to do so.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.7 *Interpret data in simple bar and line graphs to answer questions and solve real-world problems*

Sample Activities:

- Given a bar graph comparing the number of rolls of wrapping paper sold during previous years as a school fundraiser, [student's name] verbally stated which year was the most successful and brainstormed ways to make the current year's fundraiser more successful.
- During a group project in 4-H, [student's name] used a simple line graph—showing a decline in the number of live foals born in the past three years—and simple bar graphs—one showing the number of live births as related to mare's body condition, one showing the number of live births as related to the quality of the mare's feed, and one showing the number of live births as related to the amount of turnout given to the mare—to help devise a plan of action for the care and feeding of pregnant mares. The teacher and peers used guiding questions and prompting statements as needed to help [student's name] interpret the information provided.

Content Standard: DATA ANALYSIS AND PROBABILITY

Standard: *The student will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions and conjectures.*

Alternate Learning Expectation (ALE): DAP.2 *Apply basic concepts of probability*

Alternate Performance Indicator (API): DAP.2.8 *Interpret and/or construct tables using tally marks*

Sample Activities:

- [Student's name] used tally marks on a memo pad to keep score during a game of *Trivial Pursuit for Kids*.
- Given a sheet of paper showing a blank table with two columns, one labeled “boys” and one labeled “girls,” [student's name] completed the table by appropriately making one tally mark for each boy in his/her general education math class and one tally mark for each girl in the class.
- Given three columns on the whiteboard, each labeled with a game—kickball, BINGO, and Twister—[student's name] asked each of his/her classmates to name one of the three games as a favorite and recorded their choices using tally marks. [Student's name] then counted the tally marks in each column and announced how many students chose each game.